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APPLICANT:	Louis BIGO et al.	)
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TITLE:	A TAPPING CIRCUIT INCLUDING A TAPPING VALVE FOR REPLENSHING AND/OR FLUSHING THE CASING OF A HYDRAULIC MOTOR	

THE COMMISSIONER FOR PATENTS
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AMENDED CLAIMS

1. (previously presented) A hydraulic circuit including a main fluid circuit which comprises:

a hydraulic motor having a preferred operating direction and having a casing which defines an internal space and in which a cylinder block is disposed; and

at least two main pipes suitable for being put in communication with the cylinder block of the motor and constituting respectively, in the preferred operating direction of said motor a feed main pipe and a discharge main pipe;

the hydraulic circuit further comprising a tapping circuit including means for tapping fluid from the main fluid circuit and means for removing the tapped fluid to a reservoir under atmospheric pressure via a removal pipe;

said tapping circuit further comprising a single tapping and removal valve connected continuously via a tapping pipe to a single one of said main pipes, the valve also being connected to the removal pipe, the tapping and removal valve being connected to the discharge main pipe in the preferred operating direction of the motor;

said tapping and removal valve having a communication passageway between the tapping pipe and the removal pipe, said valve including means for causing the cross-sectional area of said passageway to vary continuously as a function of the pressure difference between the tapping pipe and the removal pipe.

2. (cancelled)

3. (previously presented) A hydraulic circuit according to claim 1, wherein the tapping and removal valve comprises a flow-rate regulator having at least one inlet suitable for communicating with the tapping pipe, an outlet suitable for communicating with the removal pipe, a constriction interposed between said inlet and said outlet, and means for causing the cross-sectional area of the passageway between the inlet and the outlet to vary in relation with the head loss through said constriction.

4. (previously presented) A hydraulic circuit according to claim 3, wherein the flow-rate regulator comprises a slide mounted to move in a body, a hydraulic control chamber suitable for being fed with fluid via the tapping pipe to urge the slide to move in a first displacement direction, and resilient return means suitable for urging the slide to move in a second displacement direction opposite from said first displacement direction, and wherein one of the elements constituted by the body and by the slide has at least one communication orifice, while the other of said elements has a closure wall suitable for masking said orifice as a function of the position of the slide.

5. (previously presented) A hydraulic circuit according to claim 4, wherein the constriction is situated in the slide, and it forms a passageway between the hydraulic control chamber and the outlet.

6. (previously presented) A hydraulic circuit according to claim 1, wherein the tapping and removal valve has means for opening the communication passageway only when the pressure difference between the tapping pipe and the removal pipe is at least equal to a threshold value.

7. (currently amended) A hydraulic circuit according to ~~claim 2~~ claim 1, wherein the tapping and removal valve has means for opening the communication passageway only when the pressure difference between the tapping pipe and the removal pipe is greater than a threshold value and is less than a limit value.

8. (previously presented) A hydraulic circuit according to claim 4, wherein the tapping and removal valve has means for opening the communication passageway only when the pressure difference between the tapping pipe and the removal pipe is at least equal to a threshold value, and wherein the resilient return means urge the slide continuously to return towards a position in which the communication passageway is closed off, and wherein said means are calibrated so as to allow said

passageway to be opened only when the pressure in the control chamber reaches the threshold value.

9. (previously presented) A hydraulic circuit according to claim 4, wherein the tapping and removal valve means for opening the communication passageway only when the pressure difference between the tapping pipe and the removal pipe is greater than a threshold valve and is less than a limit value, and wherein the resilient return means urge the slide continuously to return towards a position in which the communication passageway is closed off, and wherein said means are calibrated so as to allow said passageway to be opened only when the pressure in the control chamber reaches a threshold value.

10. (previously presented) A hydraulic circuit according to claim 4, wherein the tapping and removal valve has means for opening the communication passageway only when the pressure difference between the tapping pipe and the removal pipe is greater than a threshold value and is less than a limit value, said means for opening the communication passageway comprising the communication orifice having a length, as measured in the displacement direction of the slide, that is less than the stroke of said slide, and said orifice being closed by the closure wall when the slide is in its two end positions.

11. (previously presented) A hydraulic circuit according to claim 9, wherein the tapping and removal valve has means for opening the communication passageway only when the pressure difference between the tapping pipe and the removal pipe is greater than a threshold value and is less than a limit value, said means for opening the communication passageway comprising the communication orifice having a length, as measured in the displacement direction of the slide, that is less than the stroke of said slide, and said orifice being closed by the closure wall when the slide is in its two end positions.

12. (previously presented) A hydraulic circuit according to claim 1, wherein the removal pipe is connected continuously to the internal space of the hydraulic motor via an injection segment which is provided in a cover portion of said motor, and wherein the circuit further comprises a pipe for connection to a reservoir under atmospheric pressure connected to the internal space of the motor via a leakage return orifice of said motor.

13. (previously presented) A hydraulic circuit according to claim 12, wherein the tapping and removal valve is contained in a cartridge suitable for being mounted on

said cover portion by being connected to said injection segment.

14. (previously presented) A hydraulic circuit according to claim 1, further comprising a receiver which has an inlet connected to an auxiliary outlet of the tapping and removal valve, and which feeds at least one auxiliary circuit with fluid under pressure.

15. (previously presented) A hydraulic circuit according to claim 1, wherein the main circuit is a closed circuit, and wherein the tapping and removal valve is a flushing valve, the tapped fluid being removed to be cooled.

16. (previously presented) A hydraulic circuit including a main fluid circuit which comprises:

a hydraulic motor having a preferred operating direction and having a casing which defines an internal space and in which a cylinder block is disposed, and

at least two main pipes suitable for being put in communication with the cylinder block of the motor and constituting respectively, in the preferred operating direction of said motor a feed main pipe and a discharge main pipe;

the hydraulic circuit further comprising a tapping circuit including means for tapping fluid from the main circuit and means for removing the tapped fluid to a reservoir under atmospheric pressure via a removal pipe;

said tapping circuit further comprising a single tapping and removal valve connected continuously via a tapping pipe to a single one of said main pipes, the valve also being connected to the removal pipe, the tapping and removal valve being connected to the discharge main pipe in the preferred operating direction of the motor;

the tapping and removal valve comprising:

a flow-rate regulator that includes a slide mounted to move in a body,

a hydraulic control chamber suitable for being fed with fluid via the tapping pipe to urge the slide to move in a first displacement direction; and

resilient return means suitable for urging the slide to move in a second displacement direction opposite from said first displacement direction;

wherein one of the elements constituted by the body and by the slide has at least one communication orifice, while the other of said elements has a closure wall suitable for masking said orifice as a function of the position of the slide, a communication passageway between the tapping pipe and the removal pipe being open when said orifice is not masked by said closure wall; and

wherein the communication orifice has a length, as measured in the displacement direction of the slide, that is less than the stroke of said slide, said orifice being masked by the closure wall when the slide is in its two end positions so that said communication passageway is opened only when the pressure difference between the tapping pipe and the removal pipe is greater than a threshold value and is less than a limit value.

17. (previously presented) A hydraulic circuit according to claim 16, wherein the tapping and removal valve has means for opening the communication passageway only when the pressure difference between the tapping pipe and the removal pipe is at least equal to the threshold value, wherein the resilient return means urge the slide continuously to return towards a position in which the communication passageway is closed off, and wherein said means are calibrated so as to allow said passageway to be opened only when the pressure in the control chamber reaches the threshold value.